

ANNEX  
ENGLISH TRANSLATION OF CLAIMS  
AS AMENDED IN THE INTERNATIONAL APPLICATION  
NATIONAL PHASE SUBMISSION

Patent Claims

1. A method for detaching a frozen charge (5) from the inner wall of a grinding pipe (1), the drive device (2) of the grinding pipe (1) being controlled for targeted detachment of the frozen charge (5), angle of rotation ( $\varphi$ ) and speed of rotation of the grinding pipe (1) being varied by the drive device (2), characterized in that the angle of rotation ( $\varphi$ ) is set to oscillate about at least one predetermined angle of rotation ( $\varphi_1$ ,  $\varphi_2$ ).
2. The method as claimed in claim 1, characterized in that a maximum value of the angle of rotation ( $\varphi$ ) smaller than  $180^\circ$  is not exceeded.
3. The method as claimed in claim 1, characterized in that a maximum value of the angle of rotation ( $\varphi$ ) smaller than or equal to  $90^\circ$  is not exceeded.
4. The method as claimed in one of claims 1 to 3, characterized in that the maximum value of the angle of rotation ( $\varphi$ ) is dependent on the material nature of the frozen charge (5).
5. The method as claimed in one of claims 1 to 4, characterized in that the angle of rotation ( $\varphi$ ) is set to oscillate about a number of predetermined angles of rotation ( $\varphi_1$  or  $\varphi_2$ ) with the same sign one after another.
6. The method as claimed in claim 5, characterized in that the angle of rotation ( $\varphi$ ) is set to oscillate about a number of predetermined angles of rotation ( $\varphi_1$ ,  $\varphi_2$ ) with different signs one after another.

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7. The method as claimed in one of the preceding claims, characterized in that the grinding pipe (1) is braked abruptly at least once at a predetermined angle of rotation ( $\phi$ ).

8. The method as claimed in claim 7, characterized in that the grinding pipe (1) is braked abruptly to a standstill.

9. The method as claimed in one of the preceding claims, characterized in that the same motor is used for detaching the frozen charge (5) as for rotating the grinding pipe (1) during grinding operation.

10. The method as claimed in one of the preceding claims, characterized in that the frozen charge (5) is wetted.

11. A control device (3) for the drive device (2) of a grinding pipe (1) for carrying out a method as claimed in one of the preceding claims.

12. The control device (3) as claimed in claim 11, characterized in that it has means for defining an operating cycle for the grinding pipe (1).

13. The control device (3) as claimed in claim 11 or 12, characterized in that it has a field-oriented regulating arrangement.

14. A drive device (2) for a grinding pipe (1) with a control device (3) as claimed in one of claims 11 to 13.

15. The drive device (2) as claimed in claim 14, characterized in that it has a motor which drives the grinding pipe (1) both

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during grinding operation and for detaching the frozen charge  
(5).

16. The drive device (2) as claimed in claim 15, characterized  
in that the motor is coupled to a converter.

17. The drive device (2) as claimed in claim 15 or 16,  
characterized in that the motor is a ring motor.

18. A tube mill with a grinding pipe (1) and with a drive  
device (2) as claimed in one of claims 14 to 17.